

Statistics Seminar
Department of Mathematics and Statistics

DATE:	Thursday, March 23, 2022
TIME:	1:15pm - 2:15pm
LOCATION:	WH 100E
SPEAKER:	Jason Klusowski, Princeton University
TITLE:	Are Decision Trees as Powerful as Neural Networks?

Abstract

Decision trees and neural networks are conventionally seen as two contrasting approaches to learning. The popular belief is that decision trees compromise accuracy for being easy to use and understand, whereas neural networks are more accurate, but at the cost of being less transparent. In this talk, we challenge the status quo by showing that, under suitable conditions, decision trees that recursively place splits along linear combinations of the covariates achieve similar modeling power and predictive accuracy as single-hidden layer neural networks. The analytical framework presented here can importantly accommodate many existing computational tools in the literature, such as those based on randomization, dimensionality reduction, and mixed-integer optimization.

Brief Bio

Jason Klusowski is an assistant professor in the Department of Operations Research and Financial Engineering (ORFE) at Princeton University. Prior to joining Princeton, he was an assistant professor in the Department of Statistics at Rutgers University, New Brunswick. He received his PhD in Statistics and Data Science from Yale University in 2018. His research explores the tradeoffs among interpretability, statistical accuracy, and computational feasibility in learning algorithms. He is a recipient of the National Science Foundation CAREER Award.

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